UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF HOME ECONOMICS

VITAMIN AND MINERAL LOSSES IN COOKING

Loss of vitamins during cooking takes place in several ways. They may be destroyed by heat and oxidation, and they may dissolve out in the cooking water which is later discarded. The exact extent of these losses depends upon the length of time of cooking, upon the presence of air or dissolved oxygen, and upon the solubilities of the vitamins concerned.

Vitamins B, C, and G are readily soluble in water. Vitamin C is easily destroyed by heat and oxidation. Vitamin B is destroyed by long-continued heating but undergoes little destruction when heated at the boiling point of water for as long as one hour. Both vitamin B and vitamin C are more rapidly destroyed in an alkaline medium than in an acid medium.

Vitamin A is only slightly soluble in water and is not readily affected at the ordinary temperatures of boiling and baking. It is destroyed, however, at higher temperatures such as those that obtain in frying. It is also destroyed when heated in the presence of oxygen. Vitamins D, G, and E are fairly stable to heat and are not destroyed at ordinary cooking temperatures.

The value of any cooked food as a source of vitamins depends largely, of course, on its original value in the natural state. Tomatoes are an excellent source of vitamin C even after they have been cooked. This is explained by the fact that during cooking the acidity of the tomato preserves to a great extent its naturally high vitamin C potency. If the tomato were alkaline, much more of this vitamin would be lost in cooking.

In general, it may be said that the destruction of vitamins is less when foods are heated at high temperatures for short periods, than when they are heated at low temperatures for long periods. There is also less loss when a small quantity of water or no water at all is used. For this reason it is recommended that foods be cooked as short a time and in as little water as is practical. If any cooking water is left it should be used for gravies or soups unless it is so strongly flavored that this is out of the question. Steaming is one of the preferred methods for cooking since the time required is short and the amount of water used is small.

Mineral salts are not destroyed by heat, but they are very soluble in water and will be found in "pot liquor" from cooked vegetables, and in the liquor of canned vegetables. Even the moisture condensing in the bottom of a steamer contains mineral salts in solution. Baking in the skin or in a casserole (which acts as an artificial skin) are cooking methods which best conserve the minerals and vitamins.

Regardless of the kind of cooking equipment selected, the mineral and vitamin content of the diet will be best assured when some fruits and vegetables are served raw each day, some are "quick cooked" and when all vegetable and fruit juices drawn out in cooking are served in one way or another.

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